Worksheet to Identify Potential Indicators for Ecological Monitoring

You return to visit your park in 20 years and walk through the park with the current resource manager. The manager tells you about the current condition of the natural resources, the management issues, and threats of the day. What would that person describe to you?

Trying to introduce fire, especially on the NIOB. Water quantity will remain an issue because center pivots are still increasing. Non-point from cattle will continue especially on NIOB including perhaps more feedlots, ag pollution on the Missouri from chemicals. Potentially more pollution from people on NIOB although debateable. Likely increased visitor use. Recreational development (e.g., cabins, second homes) will likely increase. Stabilization and flows will still be an issue on the Missouri. Sediment loads. Climate change and potential effects on vegetation, eg in micro-communities along the NIIOB. Concerns about birch regeneration. Invasive species and endangered species. Riparian corridor management and altered geomorphology, ie altered hydrographs. Loss of riparian wetlands on both rivers. Cottonwood regeneration. Unnatural levels of erosion will continue to be an issue. Continue to work with partnerships.

What are the park's most significant natural resources (e.g., the river and its tributaries, caves and cave fauna, rare plant communities, elk herd)?

The rivers. Spring branch canyons at NIOB. Chalk rock of bluffs. All the small communities. T&E species. Sandbars and snags. Waterfalls. World class fossil sites, primarily on NIOB. Otters.

What does your park contribute to regional biological diversity (e.g., what natural resources are preserved and protected at your park that are altered or threatened throughout the rest of the region)?

Hybridization on the NIOB. Rare butterlies. Carl Mundt refuge for eagles. Potential eagle nest on the NIOB. Ecological diversity at the NIOB. Terns and plover habitat.

What park-specific legislative mandates direct the park to monitor a particular natural resource at your park.

Wild and Scenic River acts commits to insure (monitor) water quality. Specific paleo monitoring protocol.

What federally-listed threatened and endangered species are known to occur in the park?

Plovers, potentially prairie fringed orchids, Uts ladie's tresses, least terns, bald eagle (Dan – read up on the bald eagle!), pallid sturgeon. Potentially Topeka shiner on the MNRR and whoopers on the NIOB. Possibly prairie dogs in the NIOB on the TNC land.

What state-listed threatened and endangered species are known to occur in the park?

Redbelly dace, finescale dace, black-nosed shiner are state listed, but not d on the NIOB. River otter and black-tailed prairie dog on the NIOB. Osprey at MNRR, as well as plovers, terns, eagles, whooping crane. Sicklefin chub. Lake sturgeon. Eastern hognose snake.

What is that status of your park's management plans?

NIOB GMP is draft, for winter 2004, ROD in summer 2004. RMP in draft for NIOB. Fire Management plan in progress. Exotic Plant management plan completed; done with partners. FWS has NIOB river use plan; NPS may work with them. MNRR GMP completed for both districts in 97 and 99. RMP is in progress scheduled for 2006. Corp has some plans. Programmatic EAs for EPMT (applies to both parks).

What is currently being monitored at or near the park by NPS or other entities (e.g., plants by fire effects program, plants by LTEM, exotic plants by exotic plant teams, birds by Breeding Bird Survey, butterflies, stream by USGS, Christmas bird count, weather data, NRCS photography, visitors by park staff, state roadside counts --- use the checklist below)?

Air: *None.*

Amphibian: *No monitoring.*

Birds: *Tern and plovers in both parks. Winter eagle at Mundt refuge. Nesting on entire MNRR.*

Fire: *TNC monitors their burning.*

Fish: *State agencies on MNRR. Some periodic fish inventories on the NIOB. FWS with pallids. Stephen Wilson working sauger. USGS did a 5-year benthic fish study on MNRR (see Chuck Berry).*

Geology: *No. Waterfall study on NIOB could lead to monitoring.*

Mammals: *TNC has prof from Wartburg College who is doing woodrat study.*

Meteorology: *NIOB has an automated one on TNC property. None on the Missouri.*

Pests: *Steve Wilson has zebra mussel traps out. Larry Hesse is monitoring zebra mussels and Asian carp. Stephen Wilson will set up GIS database on biocontrol releases.*

Pesticides: *State of NE is spraying, may have monitoring program. Corp is monitoring and managing habitat islands. Steve Knevic with UNL has a plot that looks at different combinations of pesticides to control purple loosestrife and eastern red cedar.*

Reptiles: *None.*

Soils: *None. Corp is measuring erosion rates. NRCS has a program on the lower NIOB.*

Sound: *None.*

Vegetation: *TNC has permanent plots with photo points. State parks on the MNRR casually look at vegetation. Probably not systematic. Carl Mundt may have something going on with cottonwoods.*

Visitors: *NIOB counts visitors although may change the system. Visitor satisfaction survey. NE Game and Parks did a survey on MNRR at ramps, will hopefully be done every 5-years.*

Visual Landscape: *TNC has photopoints. MNRR did a camcorder float in 2001. USD is working with EPA to hire USGS for LIDAR may lead to periodic imagery of the river. NIOB has a program to photograph developments.*

Water Quality: *USGS station at NIOB that may be closing. NIOB has equipment for quality and quantity and goes out once a week in winter from bridge sites; in summer expands to tributaries. NE DEQ does and extensive survey every 5-years and recently did the NIOB. Corp does monitoring at dams. Local schools have stream teams mainly on the tribs.*

Wildlife or Plant Disease: *CWD through harvest and survellience. Whirling disease for trout on the NIOB.*

What are the stressors on park resources? What are the sources of each stressor?

See way above. Feedlots are a point source.

For your park, what are some monitoring questions relating to natural resource threats (e.g., does the water quality of Cub Creek meet EPA's Clean Water standards? Are exotic plants displacing native species in prairie remnants? Is urban encroachment changing deer populations within the park?)?

What is the true cause of cottonwood decline?
Is the decline in wetlands effecting amphibians?
Are amphibian populations declining?
Are amphibians and reptiles declining due to bank stabilization?
What are the vegetative effects due to fire?
How is the vegetation community changing on the NIOB.

What are some potential indicators of resource decline or improvement (e.g., water chemistry, fish community, aquatic macroinvertebrates, exotic species distribution or abundance, plant community composition, deer density, browse-line) due to the threats?

What potential management actions in the future may require monitoring (e.g., potential species reintroductions, land acquisitions, commercial uses)?

Monitor easements for enforcement. Monitor private visitors and outfitters on the NIOB. Monitor habitat on potential acquisitions on the MNRR and/or at Ponca, Ketter-Bow Creek (may be acquisition), Spirit Mount (state park). May implement burns, etc. on Goat Island. Mulberry may be an acquisition. On NIOB may get several hundred acres of BOR tracts; may want monitoring.

What would your partners like you to monitor?

Ponca would like to monitor vegetation. NRD would like MNRR to monitor at the Schmidt Tract as a result of vegetation manipulation. Habitat restoration has occurred at Spirit Mound; would really like some type of monitoring (may continue to add new species); 320 acres. NE Game & Parks would like NPS to continue monitor. NE G&P would like birch/aspen monitoring. TNC may like visitor impact monitoring at waterfalls/spring branch canyons. Group (Fire Learning network) would like fire monitoring effects at NIOB.

What current research is occurring at the park (research differs from monitoring in that it is typically of shorter duration, say 2-3 years)?

UNL bird study at NIOB (Larkin Powell).
USD woodlot study on migratory birds.
Waterfall study by UNL (Daryl Peterson).
USGS Water (Bob Joseph is the PI) quality/fish inventories at NIOB.
Geomorphic assessment on MNRR by USGS (Rob Jacobsen).
Kansas State bird study at Niobrara NWR.
Should check with TNC for NIOB
Steve Wilson will be working on existing conditions GIS study for both districts of MNRR.
FWS has a pallid and Asian carp study (Wayne Stancill).
Bio-monitoring assessment by Larry Hesse on MNRR.

Vital signs are: 1) sensitive enough to provide early warning of change, 2) have low natural variability, 3) can be accurately and precisely measured, 4) have costs and effort of measurement that are not prohibitive, 5) have monitoring results that can be interpreted and explained, 6) are low impact to measure, and 7) have measurable results that can be replicated with various personnel. Off the top of your head, look into your crystal ball and choose several vital signs to monitor over time to track the condition of natural resources within your park (items can range from broad, e.g., the stream, to narrow, e.g., a particular species). What are those vital signs? Rank them in order of importance.

NIOB
Pick up the USGS water gauging station on the NIOB.
Monitor backwater changes along both rivers perhaps using remote imagery.
On NIOB have veg plots both in riparian in regards fire and regeneration.
Monitor aquatic biota (inverts, herps).

MNRR
Produce a comprehensible report of the river.
** Goat Islands and other acquisitions will be high priority once acquired.*
Cottonwood monitoring on the MNRR; may want to partner with Corp.
Wetland/backwater changes.
Monitor exotic invasive plant species.
Ponca and Spirit Mound State assistance.
Supplement sandbar habitat monitoring that the Corp is doing.
From current inventories.